



DRAFT DELISTING DECISION FOR
LITTLE BEAR CREEK (LITTLE BEAR CREEK LAKE)
ASSESSMENT UNIT ID # AL06030006-0205-111
NUTRIENTS

Alabama Department of Environmental Management
Water Quality Branch
Water Division
November 2017

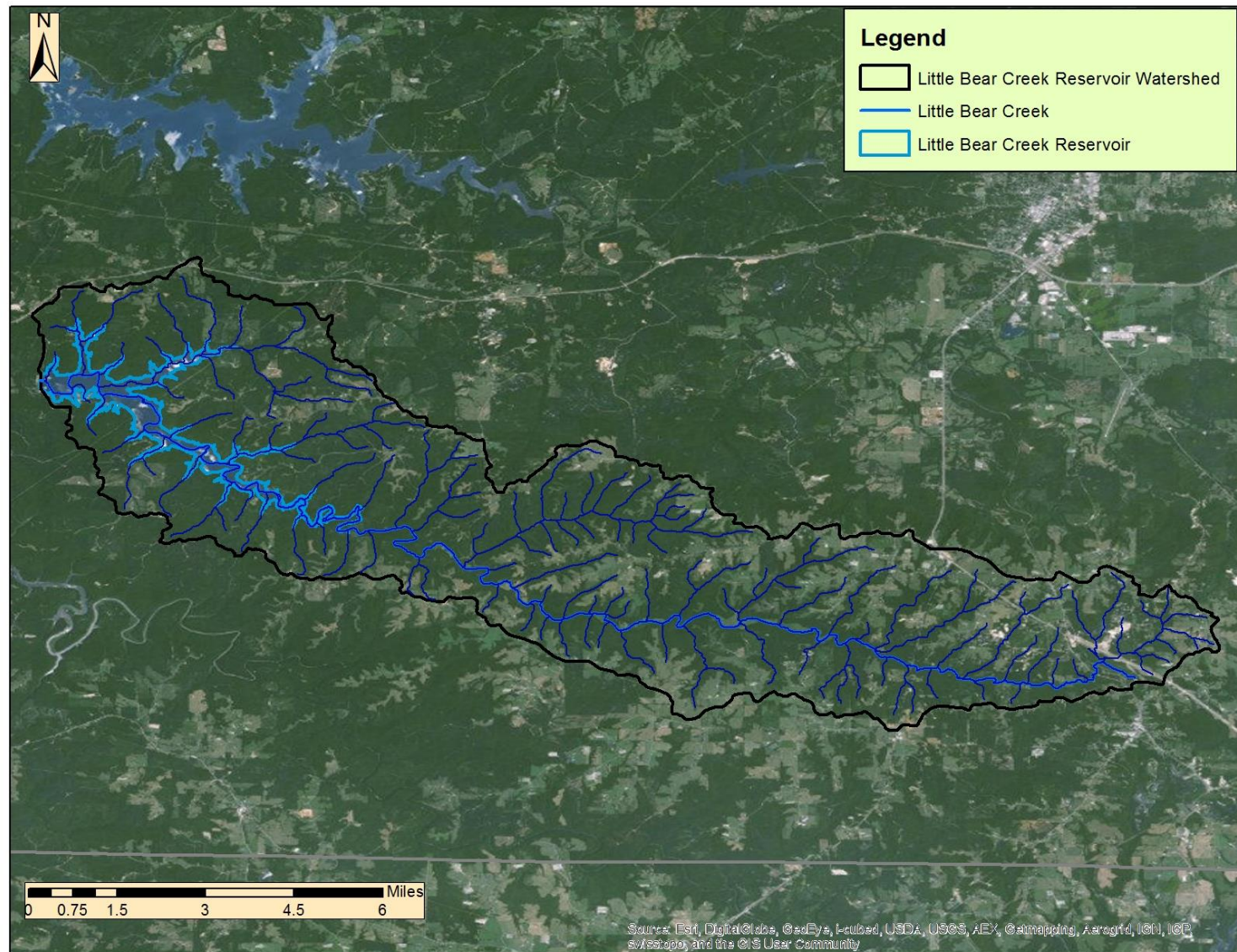


Figure 1: Little Bear Creek and Little Bear Creek Lake in the Tennessee River Basin

1.0 Executive Summary

Little Bear Creek (Little Bear Creek Lake) is located in the Tennessee River Basin in northwestern Alabama. The listed portion of Little Bear Creek (Little Bear Creek Lake) is in Franklin County, Alabama. The segment from the Little Bear Creek Dam to Scott Branch was placed on the State of Alabama's §303(d) use impairment list in 2006 for nutrients. Little Bear Creek (Little Bear Creek Lake) is currently on the 2016 §303(d) for nutrients from an unknown source and mercury from atmospheric deposition.

The listed portion of Little Bear Creek (Little Bear Creek Lake) has a designated use classification of Public Water Supply, Swimming and Fish and Wildlife. In accordance with ADEM water quality standards, the site specific chlorophyll *a* criteria is 8 µg/l, as measured at the deepest point, main creek channel, dam forebay. Compliance with water quality criteria for chlorophyll *a* is measured as a photic zone composite.

Little Bear Creek (Little Bear Creek Lake) was placed on the State of Alabama's 2006 §303(d) list based on data collected by the Tennessee Valley Authority (TVA) from 1994-2005. According to the 2006 §303d list fact sheet, "The chlorophyll *a* criterion (8 µg/l) in Little Bear Creek Reservoir (dam forebay) has been exceeded twice since 1999. In 2003 the growing season mean chlorophyll *a* concentration was 10 µg/l and in 2005 the growing season mean chlorophyll *a* level was 12 ug/l. The reservoir had rated fair all previous years. Ratings for each indicator have generally been consistent from year to year, but the lower score in 2005 was primarily due to lower rating for chlorophyll."

This report addresses the results of the delisting analysis for nutrients for the listed segment of Little Bear Creek (Little Bear Creek Lake) from the Little Bear Creek Dam to Scott Branch. Based on the assessment of all available water quality data, ADEM has determined that a nutrient impairment for Little Bear Creek (Little Bear Creek Lake) does not currently exist. Therefore, ADEM will not develop a TMDL due to "more recent or accurate data," which is just cause for delisting a waterbody according to Title 40 of the Code of Federal Regulations (CFR), Part 130.7(b)(6)(iv).

2.0 Basis for 303(d) Listing

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987 and EPA's Water Quality Planning and Management Regulations (Title 40 of the Code of Federal Regulations (CFR), Part 130), requires states to identify waterbodies which are not meeting water quality standards applicable to their designated use classifications. The identified waters are prioritized based on severity of pollution with respect to designated use classifications. Total maximum daily loads (TMDLs) for all pollutants causing violation of applicable water quality standards are established for each identified water. Such loads are established at levels necessary to implement the applicable water quality standards with seasonal variations and margins of safety. The TMDL process establishes the allowable loading of pollutants, or other quantifiable parameters for a waterbody, based on the relationship between pollution sources and in-stream water quality conditions, so that states can establish water-

quality based controls to reduce pollution from both point and non-point sources and restore and maintain the quality of their water resources (USEPA, 1991).

The State of Alabama has identified the 1435.05 acres of Little Bear Creek Lake from Little Bear Creek Dam to Scott Branch as being impaired for nutrient enrichment. The §303(d) listing was originally reported on Alabama's 2006 List of Impaired Waters and subsequently included on the 2008, 2010, 2012, 2014 and 2016 lists. The 2006 §303(d) list indicates Little Bear Creek (Little Bear Creek Lake) was placed on the §303(d) list based on chlorophyll *a* data collected in 2003 and 2005.

3.0 Technical Basis for Delisting Decision

3.1 Water Quality Target Identification

ADEM Admin. Code r. 335-6-10-.11(2)(i)6. establishes chlorophyll *a* criteria for Little Bear Creek Lake as follows:

6. Little Bear Creek Lake: those waters impounded by Little Bear Dam on Little Bear Creek. The reservoir has a surface area of 1,600 acres at full pool.

*(i) Chlorophyll *a* (corrected, as described in Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998): the mean of the photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 8 µg/l, as measured at the deepest point, main creek channel, and dam forebay.*

For the purposes of this delisting decision, 8 µg/l will be the chlorophyll *a* criterion used to evaluate Little Bear Creek (Little Bear Creek Lake) with regard to nutrients.

3.2 Data Availability and Analysis

Water quality data for Little Bear Creek (Little Bear Creek Lake) is available from TVA for the growing seasons of 2013, 2014 and 2015 from station LBDFB. Additionally, a 72-hour diurnal study was performed at station LBRF-2 by ADEM in June of 2013. The station locations are in the forebay of the reservoir near the deepest point in the channel, and are depicted below in Figure 2.

Little Bear Creek (Little Bear Creek Lake) was sampled seven times at LBDFB by TVA in 2013, 2014, and 2015. Of the seven samples in 2013, chlorophyll *a* results were reported by TVA for six samples. The annual mean of these samples was 4 µg/l, which is below the 8 µg/l criteria. Seven samples were taken at LBDFB in 2014. Of these samples, the annual mean was 6.7 µg/l, which is below the 8 µg/l criteria. Seven samples were taken at LBDFB in 2015. Of these samples, the annual mean was 6.3 µg/l, which is below the 8 µg/l criteria.

From June 3, 2013, through June 6, 2013, a data sonde was deployed by ADEM at station LBRF-2 to ascertain if there existed diurnal dissolved oxygen swings that would indicate a nutrient impairment. During that time period, diurnal swings in the dissolved oxygen levels did not indicate a nutrient impairment. At all times during the deployment, the 5.0 mg/l dissolved oxygen criteria was attained. The results of the diurnal study are included in Appendix A.

Reservoir	Little Bear Creek	Station ID	LBDFB	
Collection Date	TVA Qualifier	Parameter	Value (ug/L)	Annual Mean
5/1/2013		Corrected Chlorophyll A	2	4
5/21/2013		Corrected Chlorophyll A	7	
6/25/2013		Corrected Chlorophyll A	4	
7/30/2013		Corrected Chlorophyll A	6	
8/28/2013		Corrected Chlorophyll A	2	
9/24/2013		Corrected Chlorophyll A	3	
10/23/2013	Insufficient Sample	Corrected Chlorophyll A	Insufficient Sample	
4/23/2014		Corrected Chlorophyll A	3	6.7
5/20/2014		Corrected Chlorophyll A	4	
6/16/2014		Corrected Chlorophyll A	15	
7/23/2014		Corrected Chlorophyll A	3	
8/27/2014		Corrected Chlorophyll A	3	
9/25/2014		Corrected Chlorophyll A	2	
10/30/2014		Corrected Chlorophyll A	17	
4/21/2015		Corrected Chlorophyll A	7	6.3
5/20/2015		Corrected Chlorophyll A	9	
6/17/2015		Corrected Chlorophyll A	14	
7/22/2015		Corrected Chlorophyll A	3	
8/19/2015		Corrected Chlorophyll A	4	
9/16/2015		Corrected Chlorophyll A	4	
10/29/2015		Corrected Chlorophyll A	3	

Table 1: Chlorophyll *a* data collected by TVA at Station LBDFB

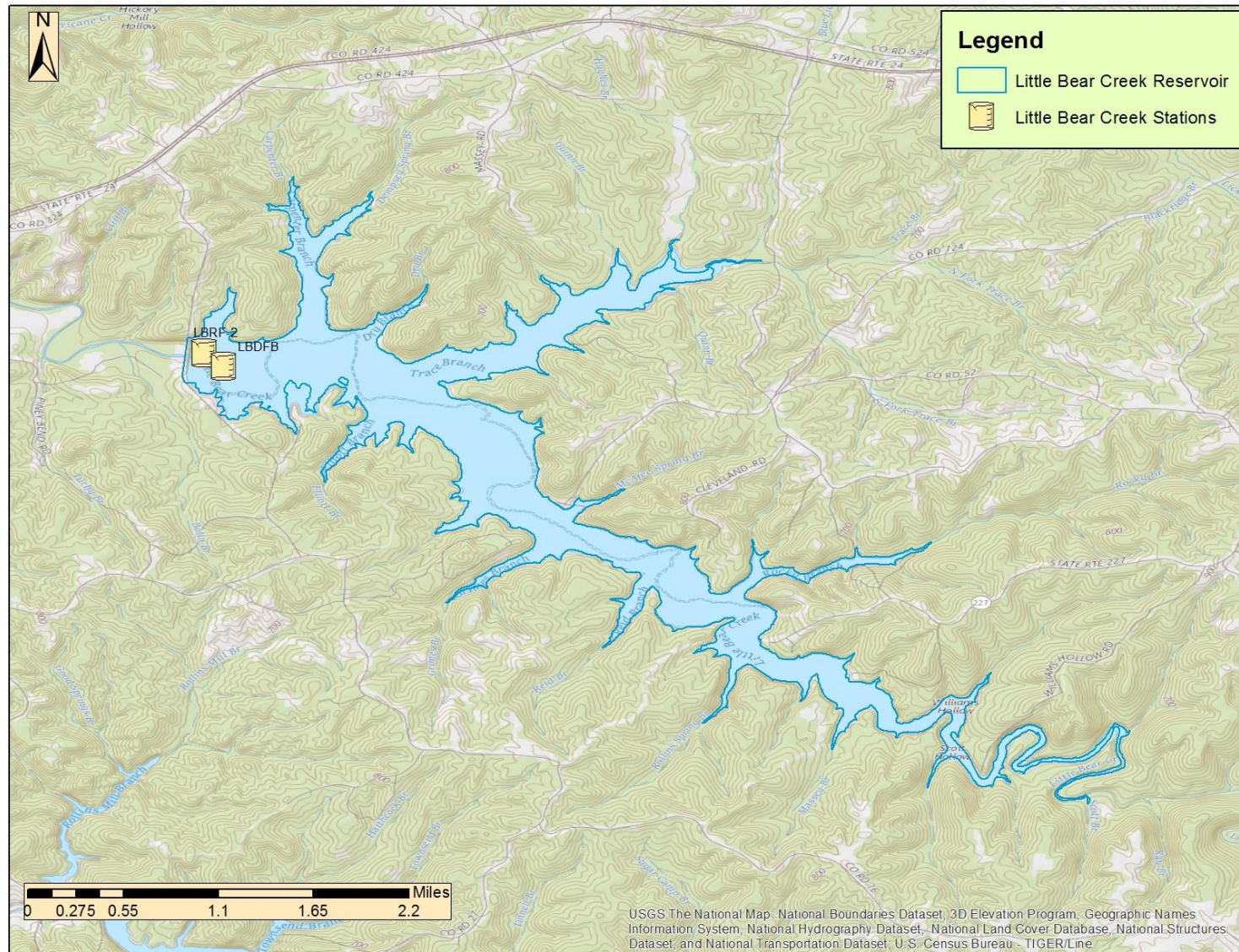


Figure 2: Location of Sampling Station LBRF-2

4.0 Source Analysis

Land use for the Little Bear Creek (Little Bear Creek Lake) watershed was determined using Arc View with land use datasets from 2011. Land use information for this assessment was derived from the 2011 National Land Cover Dataset (NLCD). Figure 3 is a map of the land use in the Little Bear Creek (Little Bear Creek Lake) watershed. Table 2 contains a breakdown of the land uses within the Little Bear Creek (Little Bear Creek Lake) watershed. The total drainage area for the Little Bear Creek (Little Bear Creek Lake) watershed is approximately 61.42 square miles. Overall, the Little Bear Creek (Little Bear Creek Lake) watershed can be considered rural. It should be noted that developed areas only comprise about 5% of the watershed. Therefore, the pollution load from developed areas is believed to be of minimal impact upon the nutrient levels in Little Bear Creek (Little Bear Creek Lake). Additionally, only about 16% of the watershed is agricultural. The vast majority of the Little Bear Creek (Little Bear Creek Lake) watershed is forested and other natural land uses. There is no reason to suspect these natural areas are contributing more than natural levels of nutrients to Little Bear Creek (Little Bear Creek Lake).

Landuse	percent
Open Water	4.17%
Developed, Open Space	3.57%
Developed, Low Intensity	0.93%
Developed, Medium Intensity	0.40%
Developed, High Intensity	0.08%
Barren Land	0.24%
Deciduous Forest	48.85%
Evergreen Forest	5.59%
Mixed Forest	2.91%
Shrub/Scrub	15.44%
Herbaceous	1.09%
Hay/Pasture	15.64%
Cultivated Crops	0.73%
Woody Wetlands	0.31%
Emergent Herbaceous Wetlands	0.05%
Total	100.00%
Agriculture	16.37%
Forest	57.35%
Developed	4.98%
Wetlands	0.36%
Other	20.94%
Total	100.00%

Table 2: Little Bear Creek Watershed Landuse Areas

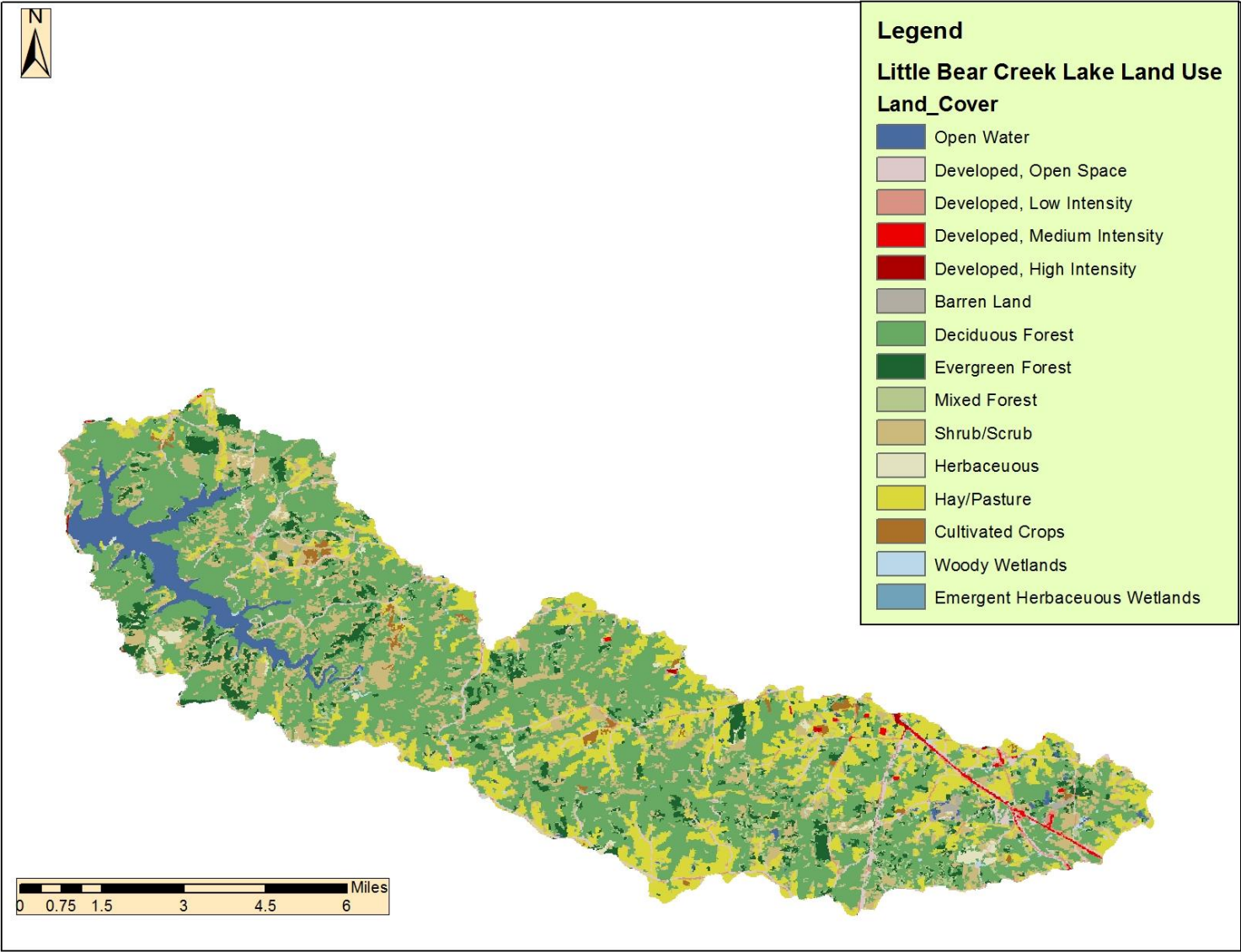


Figure 3: Little Bear Creek Watershed Landuse Map

There are no point sources regulated under the NPDES program that are expected to discharge nutrient loads to Little Bear Creek (Little Bear Creek Lake).

5.0 Conclusions

Based on an examination of all available water quality data and information related to Little Bear Creek (Little Bear Creek Lake) from the Little Bear Creek Dam to Scott Branch, ADEM has determined that a nutrient impairment does not currently exist. The chlorophyll *a* criteria set by the Department for this reservoir was not exceeded during 2013-2015, and the dissolved oxygen diurnal data does not indicate a nutrient impairment. Therefore, ADEM will not develop a TMDL due to “more recent or accurate data,” which is just cause for delisting a waterbody in accordance with Title 40 of the Code of Federal Regulations (CFR), Part 130.7(b)(6)(iv).

6.0 Public Participation

As part of the public participation process, this Delisting Decision (DD) will be placed on public notice and made available for review and comment. A public notice will be prepared and published in the major daily newspapers in Montgomery, Huntsville, Birmingham, and Mobile, as well as submitted to persons who have requested to be on ADEM’s postal and electronic mailing distributions. In addition, the public notice and subject DD will be made available on ADEM’s Website: www.adem.state.al.us. The public can also request hard or electronic copies of the DD by contacting Ms. Kimberly Minton at 334-271-7826 or kminton@adem.alabama.gov. The public will be given an opportunity to review the DD and submit comments to the Department in writing. At the end of the comment period, all written comments received during the public notice period will become part of the administrative record. ADEM will consider all comments received by the public prior to final completion of this DD and subsequent submission to EPA Region 4 for final approval.

7.0 References

ADEM Administrative Code, 2017. Water Quality Program, Chapter 335-6-10, Water Quality Criteria, and Chapter 335-6-11, Use Classifications for Interstate and Intrastate Waters.

Alabama's §303(d) Monitoring Program. ADEM.

Alabama's Ambient Water Quality Monitoring Program. ADEM.

Alabama Department of Environmental Management. 2016. Alabama's Water Quality Assessment and Listing Methodology.

Alabama Department of Environmental Management, 2006, 2008, 2010, 2012, 2014 and 2016 §303(d) Lists.

United States Environmental Protection Agency. 1991. Guidance for Water Quality-Based Decisions: The TMDL Process, Office of Water, EPA 440/4-91-001.

Appendix A: 72 Hour Diurnal Study Data ADEM Station LBRF-2

Date	Time	Temperature	Specific Conductivity	DO	pH
<i>m/d/y</i>	<i>hh:mm:ss</i>	<i>°C</i>	<i>µS/cm</i>	<i>mg/l</i>	<i>su</i>
6/3/2013	12:45:40	26.89	145	8.69	7.95
6/3/2013	13:00:40	26.35	141	8.69	8.18
6/3/2013	13:15:40	26.4	141	8.69	8.22
6/3/2013	13:30:40	26.46	141	8.79	8.26
6/3/2013	13:45:40	26.48	141	8.7	8.27
6/3/2013	14:00:40	26.55	141	8.64	8.29
6/3/2013	14:15:40	26.44	140	8.62	8.3
6/3/2013	14:30:40	26.43	140	8.58	8.32
6/3/2013	14:45:40	26.37	140	8.63	8.35
6/3/2013	15:00:40	26.42	140	8.61	8.37
6/3/2013	15:15:40	26.44	140	8.57	8.37
6/3/2013	15:30:40	26.51	140	8.58	8.38
6/3/2013	15:45:40	26.57	140	8.56	8.39
6/3/2013	16:00:40	26.68	140	8.6	8.39
6/3/2013	16:15:40	26.83	140	8.56	8.38
6/3/2013	16:30:40	26.88	140	8.57	8.38
6/3/2013	16:45:40	26.88	140	8.59	8.37
6/3/2013	17:00:40	26.83	140	8.59	8.38
6/3/2013	17:15:40	26.79	140	8.62	8.38
6/3/2013	17:30:40	26.98	140	8.5	8.37
6/3/2013	17:45:40	26.88	140	8.53	8.36
6/3/2013	18:00:40	26.73	140	8.56	8.38
6/3/2013	18:15:40	26.97	140	8.44	8.36
6/3/2013	18:30:40	26.99	140	8.4	8.33
6/3/2013	18:45:40	27	140	8.37	8.33
6/3/2013	19:00:40	26.67	140	8.5	8.36
6/3/2013	19:15:40	26.52	140	8.56	8.38
6/3/2013	19:30:40	26.66	140	8.5	8.36
6/3/2013	19:45:40	26.53	139	8.49	8.38
6/3/2013	20:00:40	26.77	140	8.36	8.35
6/3/2013	20:15:40	26.85	140	8.3	8.33

6/3/2013	20:30:40	26.83	140	8.27	8.33
6/3/2013	20:45:40	26.77	140	8.28	8.32
6/3/2013	21:00:40	26.74	140	8.32	8.32
6/3/2013	21:15:40	26.69	140	8.28	8.32
6/3/2013	21:30:40	26.68	140	8.28	8.32
6/3/2013	21:45:40	26.65	140	8.26	8.31
6/3/2013	22:00:40	26.62	140	8.26	8.31
6/3/2013	22:15:40	26.59	140	8.25	8.31
6/3/2013	22:30:40	26.54	140	8.26	8.31
6/3/2013	22:45:40	26.53	140	8.25	8.3
6/3/2013	23:00:40	26.51	140	8.24	8.29
6/3/2013	23:15:40	26.49	140	8.24	8.3
6/3/2013	23:30:40	26.45	140	8.25	8.3
6/3/2013	23:45:40	26.42	140	8.25	8.29
6/4/2013	0:00:40	26.39	140	8.27	8.29
6/4/2013	0:15:40	26.36	140	8.27	8.3
6/4/2013	0:30:40	26.32	140	8.28	8.3
6/4/2013	0:45:40	26.31	140	8.22	8.3
6/4/2013	1:00:40	26.29	140	8.25	8.3
6/4/2013	1:15:40	26.22	140	8.29	8.3
6/4/2013	1:30:40	26.23	140	8.25	8.29
6/4/2013	1:45:40	26.21	140	8.25	8.29
6/4/2013	2:00:40	26.18	140	8.25	8.28
6/4/2013	2:15:40	26.14	140	8.24	8.29
6/4/2013	2:30:40	26.12	140	8.23	8.28
6/4/2013	2:45:40	26.11	140	8.23	8.26
6/4/2013	3:00:40	26.08	140	8.23	8.28
6/4/2013	3:15:40	26.05	140	8.22	8.28
6/4/2013	3:30:40	26.03	140	8.19	8.27
6/4/2013	3:45:40	26	140	8.2	8.27
6/4/2013	4:00:40	25.96	140	8.18	8.27
6/4/2013	4:15:40	25.93	140	8.14	8.25
6/4/2013	4:30:40	25.89	140	8.16	8.26
6/4/2013	4:45:40	25.86	140	8.14	8.26
6/4/2013	5:00:40	25.85	140	8.12	8.26
6/4/2013	5:15:40	25.83	140	8.15	8.27
6/4/2013	5:30:40	25.79	140	8.14	8.26
6/4/2013	5:45:40	25.77	140	8.18	8.28
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6/4/2013	7:00:40	25.67	140	8.23	8.27
6/4/2013	7:15:40	25.68	140	8.25	8.28
6/4/2013	7:30:40	25.66	140	8.27	8.28
6/4/2013	7:45:40	25.67	140	8.29	8.29
6/4/2013	8:00:40	25.67	140	8.31	8.29
6/4/2013	8:15:40	25.69	140	8.33	8.29
6/4/2013	8:30:40	25.69	140	8.35	8.29
6/4/2013	8:45:40	25.71	140	8.49	8.3
6/4/2013	9:00:40	25.74	140	8.46	8.31
6/4/2013	9:15:40	25.76	140	8.43	8.31
6/4/2013	9:30:40	25.78	140	8.43	8.3
6/4/2013	9:45:40	25.8	140	8.41	8.3
6/4/2013	10:00:40	25.84	140	8.41	8.31
6/4/2013	10:15:40	25.88	140	8.43	8.31
6/4/2013	10:30:40	25.92	140	8.46	8.32
6/4/2013	10:45:40	25.95	140	8.46	8.32
6/4/2013	11:00:40	26.02	140	8.48	8.33
6/4/2013	11:15:40	26.1	140	8.48	8.33
6/4/2013	11:30:40	26.22	140	8.49	8.34
6/4/2013	11:45:40	26.27	140	8.52	8.33
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6/4/2013	17:30:40	26.44	140	8.69	8.4
6/4/2013	17:45:40	26.56	140	8.72	8.39
6/4/2013	18:00:40	26.74	140	8.63	8.38
6/4/2013	18:15:40	26.87	140	8.61	8.38
6/4/2013	18:30:40	26.83	140	8.58	8.37
6/4/2013	18:45:40	26.81	140	8.59	8.37
6/4/2013	19:00:40	26.55	140	8.66	8.4
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6/4/2013	23:45:40	26.21	139	8.49	8.35
6/5/2013	0:00:40	26.25	139	8.44	8.35
6/5/2013	0:15:40	26.19	140	8.46	8.34
6/5/2013	0:30:40	26.2	139	8.43	8.34
6/5/2013	0:45:40	26.2	139	8.48	8.34
6/5/2013	1:00:40	26.2	139	8.47	8.35
6/5/2013	1:15:40	26.26	139	8.46	8.36
6/5/2013	1:30:40	26.27	139	8.49	8.37

6/5/2013	1:45:40	26.28	139	8.55	8.38
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6/5/2013	2:45:40	26.34	139	8.59	8.4
6/5/2013	3:00:40	26.41	139	8.53	8.37
6/5/2013	3:15:40	26.5	140	8.38	8.36
6/5/2013	3:30:40	26.56	140	8.3	8.33
6/5/2013	3:45:40	26.54	140	8.18	8.3
6/5/2013	4:00:40	26.57	140	8.21	8.3
6/5/2013	4:15:40	26.57	140	8.21	8.29
6/5/2013	4:30:40	26.57	140	8.25	8.3
6/5/2013	4:45:40	26.56	140	8.24	8.3
6/5/2013	5:00:40	26.54	140	8.23	8.29
6/5/2013	5:15:40	26.51	140	8.23	8.3
6/5/2013	5:30:40	26.5	140	8.24	8.3
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6/5/2013	6:15:40	26.43	140	8.19	8.29
6/5/2013	6:30:40	26.42	140	8.22	8.29
6/5/2013	6:45:40	26.41	140	8.18	8.29
6/5/2013	7:00:40	26.39	140	8.22	8.29
6/5/2013	7:15:40	26.38	139	8.23	8.29
6/5/2013	7:30:40	26.37	139	8.24	8.3
6/5/2013	7:45:40	26.36	139	8.25	8.29
6/5/2013	8:00:40	26.34	140	8.23	8.29
6/5/2013	8:15:40	26.31	139	8.24	8.29
6/5/2013	8:30:40	26.3	139	8.23	8.29
6/5/2013	8:45:40	26.23	139	8.17	8.28
6/5/2013	9:00:40	26.23	139	8.2	8.27
6/5/2013	9:15:40	26.17	139	8.14	8.25
6/5/2013	9:30:40	26.17	139	8.08	8.24
6/5/2013	9:45:40	26.17	139	8.13	8.26
6/5/2013	10:00:40	26.16	139	8.12	8.25
6/5/2013	10:15:40	26.15	139	8.07	8.25
6/5/2013	10:30:40	26.16	139	8.14	8.26
6/5/2013	10:45:40	26.16	139	8.22	8.26
6/5/2013	11:00:40	26.2	139	8.21	8.27
6/5/2013	11:15:40	26.23	139	8.23	8.27

6/5/2013	11:30:40	26.26	139	8.27	8.28
6/5/2013	11:45:40	26.26	139	8.33	8.29
6/5/2013	12:00:40	26.29	139	8.41	8.3
6/5/2013	12:15:40	26.26	139	8.41	8.31
6/5/2013	12:30:40	26.26	139	8.43	8.31
6/5/2013	12:45:40	26.26	139	8.38	8.3
6/5/2013	13:00:40	26.27	139	8.43	8.3
6/5/2013	13:15:40	26.53	139	8.42	8.31
6/5/2013	13:30:40	26.68	139	8.53	8.33
6/5/2013	13:45:40	26.88	139	8.41	8.3
6/5/2013	14:00:40	26.89	139	8.39	8.3
6/5/2013	14:15:40	26.96	139	8.39	8.31
6/5/2013	14:30:40	26.97	139	8.39	8.31
6/5/2013	14:45:40	27.02	139	8.35	8.31
6/5/2013	15:00:40	27	139	8.37	8.31
6/5/2013	15:15:40	26.96	139	8.41	8.3
6/5/2013	15:30:40	26.97	139	8.32	8.31
6/5/2013	15:45:40	26.89	139	8.34	8.31
6/5/2013	16:00:40	26.46	139	8.43	8.32
6/5/2013	16:15:40	26.23	139	8.4	8.3
6/5/2013	16:30:40	26.14	139	8.4	8.31
6/5/2013	16:45:40	26.14	139	8.41	8.32
6/5/2013	17:00:40	26.11	139	8.42	8.32
6/5/2013	17:15:40	26.08	138	8.4	8.32
6/5/2013	17:30:40	26.04	138	8.42	8.32
6/5/2013	17:45:40	26.06	138	8.43	8.32
6/5/2013	18:00:40	26.03	138	8.45	8.34
6/5/2013	18:15:40	26.02	138	8.5	8.35
6/5/2013	18:30:40	26	138	8.47	8.34
6/5/2013	18:45:40	26.02	138	8.46	8.35
6/5/2013	19:00:40	26.23	138	8.41	8.34
6/5/2013	19:15:40	26.32	139	8.36	8.34
6/5/2013	19:30:40	26.32	139	8.34	8.34
6/5/2013	19:45:40	26.33	138	8.35	8.33
6/5/2013	20:00:40	26.32	139	8.34	8.33
6/5/2013	20:15:40	26.3	138	8.35	8.33
6/5/2013	20:30:40	26.31	138	8.33	8.33
6/5/2013	20:45:40	26.3	138	8.34	8.33
6/5/2013	21:00:40	26.28	138	8.32	8.33

6/5/2013	21:15:40	26.27	138	8.29	8.32
6/5/2013	21:30:40	26.26	138	8.29	8.33
6/5/2013	21:45:40	26.25	139	8.26	8.31
6/5/2013	22:00:40	26.22	139	8.24	8.31
6/5/2013	22:15:40	26.22	138	8.26	8.32
6/5/2013	22:30:40	26.21	138	8.27	8.32
6/5/2013	22:45:40	26.2	138	8.26	8.32
6/5/2013	23:00:40	26.19	139	8.24	8.31
6/5/2013	23:15:40	26.18	139	8.21	8.29
6/5/2013	23:30:40	26.16	139	8.21	8.3
6/5/2013	23:45:40	26.15	139	8.19	8.29
6/6/2013	0:00:40	26.14	139	8.21	8.3
6/6/2013	0:15:40	26.12	139	8.24	8.3
6/6/2013	0:30:40	26.12	139	8.17	8.29
6/6/2013	0:45:40	26.1	139	8.14	8.28
6/6/2013	1:00:40	26.09	139	8.19	8.3
6/6/2013	1:15:40	26.08	139	8.19	8.29
6/6/2013	1:30:40	26.06	139	8.16	8.28
6/6/2013	1:45:40	26.05	139	8.1	8.28
6/6/2013	2:00:40	26.03	139	8.14	8.28
6/6/2013	2:15:40	26.03	139	8.15	8.29
6/6/2013	2:30:40	26.01	139	8.13	8.29
6/6/2013	2:45:40	26.01	139	8.14	8.28
6/6/2013	3:00:40	25.98	139	8.14	8.28
6/6/2013	3:15:40	25.97	139	8.06	8.27
6/6/2013	3:30:40	25.95	139	8.11	8.27
6/6/2013	3:45:40	25.95	139	8.06	8.26
6/6/2013	4:00:40	25.93	139	8.07	8.25
6/6/2013	4:15:40	25.93	139	8.05	8.25
6/6/2013	4:30:40	25.92	139	8.05	8.25
6/6/2013	4:45:40	25.9	139	8.03	8.24
6/6/2013	5:00:40	25.89	139	8.01	8.24
6/6/2013	5:15:40	25.89	139	8.01	8.25
6/6/2013	5:30:40	25.88	139	8.02	8.25
6/6/2013	5:45:40	25.87	139	8.05	8.25
6/6/2013	6:00:40	25.87	139	8.06	8.25
6/6/2013	6:15:40	25.86	139	8.04	8.25
6/6/2013	6:30:40	25.86	139	8.05	8.25
6/6/2013	6:45:40	25.85	139	8.04	8.25

6/6/2013	7:00:40	25.84	139	8.03	8.24
6/6/2013	7:15:40	25.84	139	8.04	8.25
6/6/2013	7:30:40	25.84	139	8.06	8.25
6/6/2013	7:45:40	25.82	139	8.09	8.25
6/6/2013	8:00:40	25.84	139	8.09	8.26
6/6/2013	8:15:40	25.84	139	8.1	8.26
6/6/2013	8:30:40	25.84	139	8.11	8.26
6/6/2013	8:45:40	25.86	139	8.18	8.27

Appendix B: Station Photographs



LBRF-2 Looking Downstream



LBRF-2 Looking Upstream